exists at all, it must be very small, and would require a long series of observations to substantiate. There is no evidence, moreover, of any irregularity in the spectroscopic velocity curve. HEBER D. CURTIS.

COMET NOTES.

Seven new comets have been announced in the last five months: Comets *b*, *c*, *d*, and *e*, 1905, and *a*, *b*, and *c*, 1906. Three of these were discovered by photography and all were telescopic objects except GIACOBINI'S second comet (*c*) of the year 1905, which attained maximum brightness January 22, 1906, and would have been a fairly conspicuous naked-eye object but for its proximity to the Sun. The discovery of his first comet (*a*) of 1905 was followed by a lull of eight months in comet finding.

Comet *b* (SCHAER) was last seen and measured at this observatory by Mr. SMITH on December 29, 1905. Careful search with the 36-inch by Dr. AITKEN and the writer on January 5th, 20th, 26th, and 27th, under poor atmospheric conditions, failed to reveal the comet with certainty, though on the last date a suspected object was glimpsed in the predicted place.

Comet *c* 1905 (GIACOBINI) is still measurable, but is low in the western sky at sunset and difficult under the persistently bad weather conditions. The last measure secured here was on the evening of March 15th.

Comets *d* and *e* 1905 were discovered on the same photographic plate at Lowell Observatory two and four weeks respectively after the exposure. No search was made here, in the absence of sufficient search data.

Comet *a* 1906 (BROOKS) is still measurable, and is closely following the second orbit computed for it at the Students' Observatory.

Telegraphic announcement of the discovery of Comet *b* 1906 by KOPFF at Heidelberg was received March 5th. The comet was found in the photographic search for asteroids. Fortunately the weather permitted measures here on the 5th, 6th, and 7th. The comet's apparent motion is very small, as it is nearly in opposition and moving nearly parallel to the Earth's orbit (at an inclination of 1°). A fourth measure

was obtained on March 15th. Stormy or cloudy weather has prevented further observation.*

The latest comet, *c* 1906, was discovered at Melbourne by Ross, March 17th. Storm was brewing at the time on Mt. Hamilton and has prevailed continuously since, so that observation has been impossible. An orbit was computed at the Naval Observatory by Miss LAMSON from Eastern observations. The comet passed nearest the Sun on February 21st; it now sets a little north of the equator about two hours after sunset. It is improving somewhat in position for observation, but is diminishing in brightness; by April 1st it will be but half as bright as at discovery. This is one of the rare occasions when the orbit of a comet has been received before our first observation of it.

Since March 15th the Gerrish telegraphic cipher code, of Harvard College Observatory, has been employed in the transmission of astronomical messages, supplanting the more cumbersome Chandler-Ritchie Science Observer code, which has been in use for over twenty years. The new code substitutes for the ten digits the alphabetically formed syllables:—

ba	*de*	*fi*	*go*	*ku*,	*am*	*en*	*ip*	*ot*	*ux*
1	2	3	4	5	6	7	8	9	0

which can be memorized in the reading. If any of the data are omitted, the missing figures are represented by the syllable *vy*. The formation or translation of the numerical part of a telegram is accomplished by the simple exchange of numbers and syllables in order in filling out a printed blank form. There is no change of order or of units. The method of formation of the syllables renders the code practically error-proof; errors are less apt to occur, and when committed are usually apparent at a glance and corrected by inspection. A few explanatory plain words accompany each message.

JAMES D. MADDRILL.

ORBIT OF THE SEVENTH SATELLITE OF JUPITER.

Professor LEUSCHNER has recently derived an "Analytical Method of Determining the Orbits of New Satellites." An application of this method has been made by Mr. CHAMPREUX and myself to the case of the seventh satellite of *Jupiter*. The orbits given below are based upon PERRINE'S positions of

*Measured since on March 27th, after sending the note to printer.—J. D. M.